

C. Remarks

The claims are 1-3, 5, 6, 9, 13 and 16, with claim 1 being the sole independent claim. Claim 1 has been amended to clarify the invention. The amendment to claim 1 is fully supported by the specification as originally filed; no new matter has been added. Reconsideration of the present claims is respectfully requested.

Claims 1-3, 5, 6, 9, 13 and 16 stand rejected under 35 U.S.C. §112, first paragraph. In light of Applicants' amendment of claim 1 to remove the term "only", Applicants submit that the §112 rejection is moot and should be withdrawn.

Claims 1, 3, 5, 6, 9, 13 and 16 stand rejected under 35 U.S.C. §102(e) as being anticipated by Kaneko (U.S. Patent No. 6,141,070). Applicants respectfully traverse this rejection.

The object of the present invention is to solve the problem of contrast deterioration caused by temperature change of Δn of a liquid crystal composition as illustrated in Fig. 3 and as described in the substitute specification at paragraph [0007]: "One of the problems has been that contrast deteriorates with change in temperature, due to the temperature properties of the refractive index anisotropy of the liquid crystal composition (hereafter represented by " Δn ")." More particularly, R (retardation) of a liquid crystal cell decreases as Δn becomes smaller with high temperature, and a gap between R and a retardation of a phase compensation plate increases; then phase compensation becomes imperfect, and, as a result, contrast deteriorates. Such retardation change will be called type (a) for discussion purposes.

On the other hand, R of the liquid crystal element changes not only by Δn of the liquid crystal composition but also by an orientation state of liquid crystal molecules

between the top and bottom substrates. This is detailed in the substitute specification at paragraph [0029]: "The retardation value R implies the sum of Δn of the molecules of the liquid crystal sandwiched between both substrates in the direction of the substrates and is defined by $R = \Delta n d$ (wherein d represents the thickness of the liquid crystal)." More particularly, when the liquid crystal molecules are oriented in parallel to the substrate surface, Δn of each of the liquid crystal molecules are simply summed up to give R , but when the liquid crystal molecules are oriented with an angle θ to the substrate, only an amount $\Delta n \cos \theta$ contributes to R . Such retardation change will be called type (b) for discussion purposes.

The present inventors recognized that the orientation state of molecules between the top and the bottom substrates changes when the pre-tilt angle is changed. The present inventors accordingly invented (and presently claim) a device in which type (a) retardation change is effectively cancelled by type (b) retardation change. Amended claim 1 now clearly describes this feature.

Kaneko describes at column 11, lines 20-26, that $\Delta n d$ of the liquid crystal element decreases as temperature rises. Though it is not clear whether the retardation change is type (a) or type (b), Kaneko discloses only that the $\Delta n d$ change is compensated by using a temperature-compensation type retardation film. Further, as described at column 11, lines 42-48, and column 16, line 64, to column 17, line 4, the temperature change of $\Delta n d$ of a temperature-compensation type retardation film follows, i.e., changes in the same way as, that of the $\Delta n d$ of the liquid crystal. Otherwise, it could not work.

On the contrary, according to the present invention, type (a) retardation change is opposite to type (b) retardation change, i.e., type (a) decreases and type (b)

increases with increasing temperature. Thus, retardation change is suppressed or cancelled. Hence, it is clear that the liquid crystal device of the present invention is very different from that of Kaneko. Accordingly, Applicants respectfully request withdrawal of the §102 rejection.

In view of the foregoing amendments and remarks, favorable reconsideration and passage to issue of the present case is respectfully requested. Should the Examiner believe that issues remain outstanding, the Examiner is respectfully requested to contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,


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